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Beath't Reducer and Amalgamator.

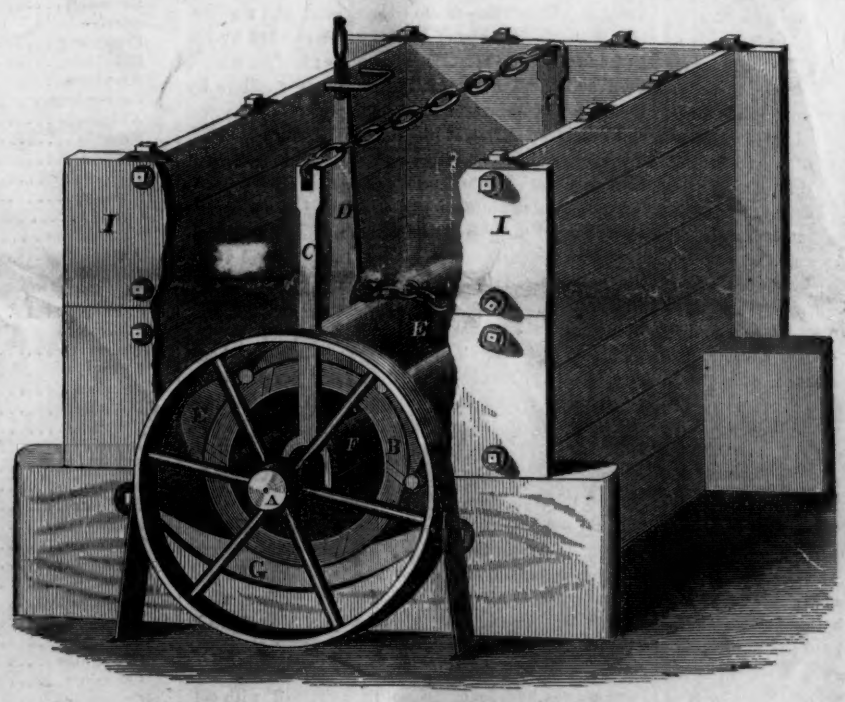
The accompanying engraving represents fully, Beath's Reducer and Amalgamator, which is already favorably known.

The reducing is done on the TOP AND SIDES of a revolving horizontal cylinder, inclosed in a casing filled with Pulverized Ore, so as to cover the cylinder, while the Quicksilver occupies the concave bottom of the casing, BENEATH THE CYLINDER. By the velocity of the cylinder the diluted ore is drawn in through central openings in its ends, and ejected through narrow openings in its periphery upon the quicksilver, but not with sufficient force to raise it to the level of the dies.

The extraordinary rapidity with which ore is reduced to an impalpable slime in this machine is due to the method of hanging the dies, so as to adjust themselves as they wear, always remaining open in front, for the reception of the coarser particles of ore, and constantly reducing them as they pass back by the surfaces converging to a close contact at the back of the dies. Those who have had experience in reducing ores with the machines in use will appreciate this improvement.

Among other considerations, is a comparatively high speed obtained, with great economy of power—the grinding surfaces only being exposed; also, a degree of heat sufficient for amalgamation obtained by its own action—and it is cleaned up with the greatest ease, without removing any portion of the Machine; there are no lurking places for the ore, nor can there be any packing of sands to prevent its starting. Ore broken to the size of grains of corn, is readily reduced.

Messrs. Morey & Sperry, 95, Liberty Street, manufacture these machines, and will give further information if required.



BEATH'S REDUCER AND AMALGAMATOR

Petroleum as a Steam Fuel.

Mr. C. J. Richardson communicates to the London *Mining Journal* some account of his experiments at the Woolwich Dock Yard as follows: "All the difficulties of burning the oil were at last mastered, and an evaporation, constant and continuous, of 18 lbs. of water to 1 lb. of oil obtained. It was evident that this figure could have been exceeded. The boiler is open at the back, and at one of the fire-places there was considerable leakage, through the grate not fitting closely. Whenever the oil is burnt without being subjected to the steam jet there is always a little smoke. The use of water as an auxiliary fuel to the oil is to some of the engineers almost incomprehensible; but the oil cannot be used as steam fuel without it. There is no other way of getting rid, or rather wholly preventing the enormous quantity of smoke and soot the oil makes when burnt in a confined space. Decomposing a small quantity of water vapor, and burning the gases, does it completely, and increases the power of the boiler from 60 to 80 per cent. It was an extremely difficult thing at first to do properly, and it has taken three months experimenting to find out an easy method; now the oil and the steam go in side by side, without the least difficulty. They have to be exactly regulated to each other, the more smoky oil requires the most steam. The steam can put the fire out or burn the petroleum very quickly, according to the quantity used. A ship can and will soon be able to go round the world and burn the natural or the artificial, oil or the common residum at pleasure. If 1 ton of the oil does as much as 2 1-2 or 3 tons of the best coal, the freight space gained pays for the extra expense of the oil, and leaves a large profit besides. Coal is not so cheap in any part of the world as it is here. Besides the profit gained there is much less labor in using the oil. It can be stowed securely in the lowest part of the vessel—a syphon pipe runs it into the boiler in a constant stream. The fire-doors need never be opened; the fires can be put out and relighted without opening them. There is no ash or cinder of any kind. The petroleum coke forms a skin on the suaface of the grate, and protects it; it is indestructible itself, and forms a better porous grate than any we can make. The engineers are still undecided as to the amount of heating surface and grate surface required by the new flame, as the present boiler was only made to burn petroleum alone, not water fuel in addition, as it is far too small in capacity of fire-place for the flame of the two fuels, which is, in fact, a new force and one of great power.

CRUSHING A SILVER WALL.—The high wall on the west side of B street, near where the old office of the Gould & Curry Company used to stand, is now being taken down for milling purposes. It was built some two years ago, of loose rock and boulders of the Gould & Curry croppings. Much of it is pretty good ore, and it is to be carefully broken up and assorted by Mexicans and taken to mill. It will probably yeild $40 to the ton. The wall was built when good pay ore was plentier in the Gould & Curry than it is found at present, therefore all these odds and ends are now being made available. It will be a wonderful story to tell some people in the older States that we have walls out here in Nevada, built of solid silver ore. Such however is the fact.—*Virginia Enterprise, July* 14th.

Utilization of Coal Waste.

Many plans for consolidating coal dust without cement have been tried, but the accomplishment of this very desirable end has not yet been attained. The bricks prepared according to the French plan of Evrard, by mere pressure, burn well but will not bear transportation.—The process of Bessemer, in which the coal is heated almost to redness and then compressed, is too expensive and wasteful; while in that of Baroilier, where the coal is compressed first and baked afterwards, the cost of handling is considerable, and the "plant," or adhesive, required very expensive.

Of the cements, potters' clay is the cheapest, while the most used is coal tar and its derivative, solid or liquid pitch.—Several patents have lately been taken out in this country wherein vegetable and animal matter, such as cheap glutinous and mucilaginous substances, or glue in some form, is used. Plaster of Paris and lime cements have also been used, but have generally some objection in practice—either that the coal waste and other material are not found in the same vicinity and require long transportation, or the adhesives are too expensive at the first, or impede combustion.

In France, 18 or 20 establishments are engaged in the manufacture of compressed coal waste, producing yearly about 500,000 tons. Belgium has seven manufactories, producing about 400,700 tons.

THE BERDAN GUN.—The Board of Army Officers appointed by the government to test small arms, recommended Colonel Berdan's plan of converting breech loaders; also the same plan to be applied to new arms. The Berdan musket was fired 100 *times in five and one half minutes* the first twenty rounds in one minute. It had been previously fired three hundred times for the purpose of "fouling" it and had then been rusted in salt and water, and afterwards rolled in fine sand. This test is without parallel. The rapidity of fire of this arm is more than double that of the famous "needle gun" of the Prussians.

The Chemistry of Gas Lighting.

BY DR. LETHEBY.*

[CONCLUDED.]

From the London Mechanics' Magazine.

The raw gas, as it leaves the retort, consists of aqueous vapor, vapor of tar, carbonic acid, carbonic oxide, ammonia, cyanogen, sulpho-cyanogen, sulphuretted hydrogen, bisulphide of carbon, sulpho-hydrocarbons, hydrogen, light carburetted hydrogen, olefiant gas, &c. Most of these are useless as illuminating agents, and therefore the necessity for purification. Fortunately, this, to a large extent, is easily affected by the natural process of condensation. As the gases and vapors cool, the condensable portions separate as liquid products, and thus in the hydraulic main and the condensers, the oily tar and the aqueous ammoniacal liquor separate of their own accord. The indications, therefore, of this first step of natural purification is to cool the raw gas as much as possible. But even when thus cooled it contains a large proportion of impurity which is soluble in water; and hence, the next indication is the necessity for the use of a contrivance which shall bring the gas into contact with an aqueous solvent. Looking at the variable quality or composition of ammoniacal liquor, and that the proportion of ammonia in it ranges from about 1000 grains in the gallon to about 4000, or, in other words, that the saturating power of it per gallon is from about 6 ounces of the strongest sulphuric acid to 26 ounces, it is manifest that the best and proper washing is ammoniacal liquor. This ought never to leave the gas works with less than 2000 grains of ammonia in it to the gallon, or with a less saturating power than 13 ounces of sulphuric acid. There is no reason, indeed, why it should not always contain nearly double this quantity of ammonia. The use, therefore, of ammoniacal liquor as a washer of raw gas is a natural inference. It was first suggested by Mr. Hawksley, and he has put it into practice with excellent effect, for not only does the ammoniacal liquor afford a means of removing ammonia, sulphuretted hydrogen, and carbonic acid from the raw gas, but, being already saturated with hydrocarbons, it does not take up any more of these illuminating agents; besides which, it can be used as a *douche* in such quantity in a large washer, that it operates very successfully as a cooling agent. The suggestions, indeed, of Mr. Laming, that every charge of ammoniacal liquor thus used might be first filtered through hydrated oxide of iron, so as to move the sulphuretted hydrogen, and thus give it more effective purifying power, is not without practical value. But even when the gas has been thus cooled, and has left the condensers, it is not so free from ammonia, carbonic acid, and sulphuretted hydrogen as that a small quantity of water properly distributed in a scrubber will not still further purify it, and the arrangement should be such that the water should trickle very slowly over a large surface, and reach the bottom of the scrubber almost saturated with impurities. Leaving this part of the apparatus, the raw gas should never contain more than 1 volume in 1000 of ammonia, 8 of sulphuretted hydrogen, and 20 of carbonic acid. These are in the proportion of 312 grains of ammonia, 5048 of sulphuretted hydrogen, and 16,336 grains of carbonic acid in 1000 feet of gas. Then comes the chemical means whereby these can be best removed, and this involves an inquiry into the action of the purifiers, as they are called.

The order in which these impurities should be taken out is a matter of no slight importance. Chemistry teaches us that the first impurity to be removed is ammonia, for its presence checks the withdrawal of carbonic acid and sulphuretted hydrogen. Among the many suggestions that have been made for the absorption of ammonia, there is none so effective as diluted sulphuric acid, and it is found that 49 pounds by weight of the strongest sulphuric acid will remove 17 of ammonia. It will take, therefore, 909 grains, or rather more than 2 ounces sulphuric acid, to remove the ammonia from the 1000 cubic feet of gas. The acid is best used diluted with about its own bulk of water, and sprinkled upon saw-dust, which should be placed first in the trays of the purifiers; and the saw-dust thus saturated with ammonia is a valuable material, as it should contain fully half its weight in sulphate of ammonia. Other valuable absorbing agents have been proposed, as the spent acids of various manufacturing processes, the acid salt of alumina obtained by boiling clay shale with sulphuric acid, (Croll,) and the residual chloride of manganese from bleaching works. This has recently been used by Mr. Croll in the form of a nearly dry mixture with sawdust, and it yields a salt of ammonia remarkably free from impurities.

Next after the ammonia, it is proper to remove the sulphuretted hydrogen, and unquestionably, if no sanitary conditions are concerned, the best agent for this purpose is wet lime, a material which will not only remove the sulphuretted hydrogen, but will likewise absorb the carbonic acid. Theoretically, 28 parts of lime will take up 17 of sulphuretted hydrogen, and another 28 parts will take up 22 of carbonic acid. It follows, therefore, that that about 3 lbs. of lime will absorb the carbonic acid, and 1¼ lb. the sulphuretted hydrogen in the 1000 cubic feet of gas, taking altogether about 42½ lbs. of lime for 10,000 cubic feet of gas. But this is on the supposition that the lime is thoroughly effective, and that it is used in a very wet state; practically, it is not so completely effective, and hence it takes about 50 lbs. of wet lime to purify the 10,000 cubic feet of gas. If the lime is used in a dry state, (as a hydrate,) it is by no means as effective, for it requires fully double the quantity of lime to purify the gas. This is due to the circumstance that the interior of the little lumps of lime is never reached by the gas, and therefore remains inoperative; besides which, the lime is getting constantly drier in the purifiers by the heat of combination with the impurities of the gas, and as the lime dries, it loses its capacity for absorbing these impurities; absolutely dry lime, in fact, will scarcely absorb sulphuretted hydrogen.

The offensive nature of spent lime, or blue billy, is such that a demand has been made on science to furnish a less objectionable means of purification; and hence the use of the hydrated oxide of iron—a material which, when tolerably pure, will absorb sulphuretted hydrogen in the proportion of 16 parts of sulphuretted hydrogen to about 33 of oxide. It will take, therefore, about 14 lbs. of the hydrated oxide to remove the sulphuretted hydrogen from 10,000 cubic feet of gas. It has then become a sulphide of iron, and has lost its power of purification, and must be revived. This is accomplished by simply exposing the oxide to the air, when it takes in atmospheric oxygen, and again passes into the state of hydrated oxide of iron, while the sulphur is set free in the mixture. The oxide thus charged is then used again and again, until it becomes charged to the extent of about 57 per cent. of sulphur, when it is no longer effective. Practically, a ton of oxide will, by successive revivication, purify about 5,000,000 cubic feet of gas, and will absorb about 3600 lbs. of sulphuretted hydrogen. When thus charged with sulphur, it is valuable for manufacturing oil of vitriol.

If hydrated oxide of iron has been used as the purifier, lime must also be afterwards employed for the purpose of removing the carbonic acid, which is so destructive of the light of the gas when it is burned.

Having left the purifiers, the constituents of the gas are as follow:

	Per cent.
Hydrogen,	25 to 50
Light carburetted hydrogen, $C^2 H^4$	35 to 52
Olefiant gas, $C_4 H_4$ Propylene, $C_6 H^6$ Butylene, $C_8 H^6$ Other hydrocarbons, $C_n H_n$ Benzole vapor, $C_{12} H^6$ Acetylene, $C_4 H^2$	3 to 20
Carbonic oxide, C O	5 to 6
Carbonic acid, C O_2	0 to 2
Cyanogen, C_2 N	? to ?
Ammonia, N H_3	0·01 to 0·06
Bisulphide of carbon, C S_2	? to ?
Sulpho-hydrobarbons	? to ?
Aqueous vapor	2 to 8
Oxygen	0 to 1
Nitrogen	0 to 8

The properties of each of these constituents were demonstrated by experiment, and reference was made to their specific gravities, to their combining volumes, to the proportion of oxygen which they required for combustion, to the quantity of carbonic acid so produced, to the heat evolved, and to the action of water, chlorine, bromine, and anhydrous sulphuric acid upon them.

One of the interesting features of this part of the lecture was the production of acetylide of copper from the coal gas of the hall, and the exhibition of acetylene in large volume; as also the production of nitro-benzole from the gas, by passing it through fuming nitric acid.

As regards the means of determining the proportions of the condensible hydrocarbons in coal gas, Dr. Letheby showed that, as all the illuminating constituents of coal gas, excepting the light carburetted hydrogen, were absorbed by bromine and by anhydrous sulphuric acid, neither of these tests were worth anything as an indication of the illuminating power of the gas. In speaking of acetylene, he alluded to the fact that its production by the intense ignition of carbon in hydrogen was a remarkable example of the production of a hydrocarbon by the immediate combination of its elements; and he observed that as acetylene, which is such a powerful illuminating agent, may be made by the action of carbonic oxide on light carburetted hydrogen at high temperatures, it is possible that hereafter it will be found that by a proper arrangement of apparatus, a high temperature may be best suited for the production of illuminating gas. The sole difficulty, perhaps, to be overcome will be the formation of carbonic oxide and marsh gas in proper proportions.

With respect to the existence of sulphur compounds in coal gas Dr. Letheby demonstrated by many experiments, that sulphide of carbon and one or more sulpho-hydrocarbons were always present; and he showed the patented processes of Mr. Bowditch, Dr. Stenhouse, and Dr. Angus Smith, for removing these compounds

Principal Constituents of Coal-tar.

	Formulas.	Boiling Points Degrees Fahrenheit.
Acids—		
Acetic	$C_4 H_4 O_4$	248
Butylic—	$C_8 H_8 O_4$	315
Phenic	$C_{12} H_6 O_8$	370
Cresylic	$C_{14} H_8 O_2$	397
Phlorylic	$C_{16} H_{10} O_2$	...
Rosolic	$C_{24} H_{12} O_6$	...
Brunolic	?	...
Neutral—		
Propylene	$C_6 H_6$	...
Butylene	$C_8 H_8$	54
Amylene	$C_{10} H_{10}$	102
Caproylene	$C_{12} H_{12}$	131
Alliaceous	?	?
Benzole	$C_{12} H_6$	176
Toluole	$C_{14} H_8$	237
Xylole	$C_{16} H_{10}$	259
Cumole	$C_{18} H_{12}$	302
Cymole	$C_{20} H_{14}$	347
Naphthaline	$C_{20} H_8$	414
Anthracene	$C_{28} H_{10}$	...
Paraffin	$C_n H_n$	...
Pyrene	$C_{30} H$	...
Chrysene	$C_{12} H_4$	...
Alkalies—		
Ammonia	H_3 N	...
Methylamine	$C_5 H_5$ N	...
Ethylamine	$C_4 H_7$ N	66
Petinine	?	176
Cespitine	$C_{10} H_{13}$ N	205
Pyrrhidine	$C_{10} H_5$ N	271
Picoline	$C_{12} H_7$ N	273
Lutidine	$C_{14} H_9$ N	309
Collidine	$C_{16} H_{11}$ N	338
Aniline	$C_{12} H_7$ N	360
Parvoline	$C_{13} H_{13}$ N	370
Toluidine	$C_{14} H_9$ N	388
Coridine	$C_{20} H_{15}$ N	412
Xylidine	$C_{16} H_{11}$ N	415
Cumidine	$C_{18} H_{13}$ N	437
Rubidine	$C_{22} H_{17}$ N	446
Cryptidine	$C_{22} H_{11}$ N	...
Leucoline	$C_{18} H_7$ N	455
Cymidine	?	462
Viridine	$C_{24} H_{19}$ N	484

* Abstract of a lecture delivered at Manchester, before the British Association of Gas Managers.

He referred also to his own apparatus for estimating the amount of sulphur in purified coal gas; and likewise explained the means of determining the proportion of ammonia in gas, and he spoke of this impurity as a purveyor of the offensive tar-like hydrocarbons.

A slight reference was made to the subject of coal-tar, and to the large field of chemical research which it had exposed to the chemist; and a few of the more interesting of the coal-tar pigments were made, and nearly all the products were exhibited upon the table. (*see above.*)

Lastly, in respect of the chemistry of the combustion of gas, Dr. Letheby showed under what circumstances it was best consumed, and he demonstrated in various ways, as by Erdmann's gas-prover, that the proper illuminating power of coal gas could only be obtained by an accurate adjustment of the air to the gas. This was chiefly accomplished in the Argand burner by a proper adaptation of the internal aperture to the quality of the gas; a burner of only 0·42 of an inch internal bore, was well suited for 11-candle gas, one of 0·44 of an inch for 13-candle gas, and one of 0,50 of an inch for 15-candle. In each of these cases the burner is used without the gauze diaphragm, and with a 7-inch chimney, the gas being burned at the rate of 5 feet an hour; but the same result and a steadier flame is obtained by using Sung's burner of a little smaller diameter of the internal hole in each case, and a gauze diaphragm. By experiment with Leslie's burner, which is altogether unsuited for gas of low illuminating power, it was shown that the light of the gas might be seriously destroyed.

The relative values of different illuminating agents were shown by the following table.

Relative values of Illuminating Agents in respect to their Heating and Vitiating effects on the Atmosphere, and burning so as to give the light of 12 *standard Sperm Candles.*

	Pounds of water heated to 1° Fahr.	Oxygen consumed, (cubic feet.)	Carbonic acid produced, (cub. feet.)	Air vitiated, (cubic feet.
Cannel Gas.....	1950	3·30	2·01	50·8
Common Gas.....	2786	5·45	3·21	80·2
Sperm Oil.....	2335	4·75	3·33	83·3
Benzole	2326	4·46	3 54	88·5
Paraffin	3619	6·81	4·50	112·5
Camphene	3251	6·65	4·77	119·2
Wax Candles.....	3831	8·41	5·90	149·5
Sperm "	3517	7·57	5·26	131·7
Stearic "	3747	8·82	6·25	156·5
Tallow "	5054	12·06	8·73	218·3

In conclusion, the lecturer observed that every day brought to light some new fact connected with the chemistry of gas manufacture, which deserved the careful consideration of all who, like those whom he was addressing, were practically engaged in this important branch of industry. He had endeavored to lay before them, with as much fulness as the time allowed, the most prominent features of the question, as far as the light of science had at president elucidated them; but the subject, in all its details, was far too complex to allow of more than a mere general statement in a compass of a single lecture.

THE COMSTOCK LODE.—The news from these mines (San Francisco, Aug 6,) indicate an improved product. Hale & Norcross in the month of July produced nearly $140,000. Savage declared a dividend of $50. Crown Point, although timbering their shaft, worked 2,000 tons of ore. Gould & Curry produced in July $125,000. The supposed product of Yellow Jacket was $250,000; dividend $50. The product of the Imperial was $65 000. Ophir looks better, and Chollar no worse. Overman reports continue favorable.

A despatch dated the 7th states the amount of bullion shipped during the first seven months of 1866 from Virginia City and Gold Hill at $7,891,326. The August yield is estimated at $1,500,000. This rate for the eight months would give something like 12½ millions for the year.

Process of Roasting Ores, etc.

Translated from the German of F. Plattner, for the MINING & PETROLEUM STANDARD AND AM. GAS-LIGHT JOURNAL, by

J. H. TIEMANN, M. E.

NUMBER I.

The treatment at a high temperature of ores as they come from the mines, or of such as have been subjected to the process of concentration, as well as of such products as have been obtained metallurgically from sulphur or arsenical ores, which serves to prepare them for further metallurgical operations, is called Roasting. Roasting has for its object, by the action either of air alone or in combination with chlorine gas, chlor compounds, steam, &c., upon the ores, the production of such chemical changes as are necessary for the further working of the ores.

The old technical term of "Calcining" or "Burning" is also sometimes used for such preparation of the ores. The term "Calcining" is derived from the burning or heating of limestone, which, at a bright red heat, gives off its carbonic acid, for which purpose, the admission of atmospheric air is not absolutely necessary. In former times, as it was not known that the oxygen of the air performed the principal part in roasting ores or mill products, for the purpose of expelling certain components, as sulphur and arsenic, there was no difference made in the roasting process with or without the admission of atmospheric air. This term was consequently used, not only for such ores, which consisted of metallic oxides, in which the oxide was chemically combined with water or carbonic acid, and from which they could be freed by the simple application of heat, as, for instance, many iron and zinc ores, but was also used for such ores as contained combustible compounds, and which, consequently, could only be prepared for further treatment by the admission of atmospheric air, at a high temperature. The term "Burning" was used more frequently to designate the roasting of such ores which, in the form of large or small lumps, were to be more or less freed from their combustible compounds, and where the "Burning" was repeated, atmospheric air being admitted, till the volatile or combustible compounds were removed as far as necessary, and the remaining components decomposed sufficiently for further treatment.

The objects of roasting are various, depending upon whether the substance, after it has been roasted, is to be treated by one or the other method; whether each remaining component is to undergo a certain change, or whether it be desired, during the roasting, to separate certain components in the form of gas, to be recovered by condensation. For many ores and mill products it is advantageous, and in many cases, absolutely necessary that, before roasting, they should be reduced to powder, if not already in that condition from previous treatment. For many other ores and mill products, on the contrary, it seems to be better that they should undergo roasting in lumps, of proper size, not only because in such cases there is economy in fuel, but because such ores after their roasting, provided the metal is not liable to be driven off in vapor, as, for instance, quicksilver, may be more profitably worked than when in the form of powder.

By roasting, the following objects are effected;

I. The oxidation of such metals as are combined with sulphur and arsenic, or in general such metals as are combined with combustible matter, for the purpose of either forming free oxides, or oxides in combination with an acid, and to drive off, in the form of vapor, the residuum of sulphur, arsenic, &c., either in combination with, or free from, oxygen; again, is the substance to be roasted a compound of metal and oxygen, *i. e.*, an oxide, it is often desired to combine it with more oxygen, to subject it to a higher oxidation. As these results can only be obtained by the free admission of atmospheric air during the time that the substance is at such a temperature that its components are disposed to unite with oxygen, such roasting is termed an "Oxidising Roasting."

II. The decomposition and changing, as far as possible, to free oxides, the sulphur and arsenical metal oxides formed in the oxidising roasting of many finely pulverized substances. As, in many cases, it is disadvantageous to effect this by increasing the heat, or even impossible by the aid of heat alone, finely pulverized coal, or some substance rich in carbon and hydrogen, is added, the admission of air being for a time prevented, which causes a reduction of the sulphuric to sulphurous acid and of the arsenic acid to a sub-oxide of arsenic and metallic arsenic—that is, a decomposition of the sulphuric and arsenic acid metal oxides and the removal of the resulting volatile compounds. During the volatilization of the reduced compounds, carbonic acid and carbonic oxide gas is formed, leaving the metallic oxides behind in a free state—many of them, however, less highly oxidised. Such roasting is termed a "Reducing Roasting." If now atmospheric air be admitted, the remaining carbon burns to carbonic acid, and many of the metallic oxides, which were reduced to a lower grade of oxidation, absorb oxygen again.

III. The combination of the metals with other bodies, by the aid of proper admixtures. When in a roasting process, having for its object the oxidising and decomposition of sulphur and arsenic metals, certain substances are added, as, for instance, the addition of salt, and, according to circumstances, sulphate of iron, to ores and mill products which are to be treated by amalgamation for the extraction of the silver, there ensues a chemical decomposition, new compounds are formed; sulphate of soda, together with different other compounds, the latter being more or less volatile. Such a roasting is termed a "Chloridising Roasting."

IV. The complete evaporation of such parts of the ore as become volatile at a high temperature, as, namely, carbonic acid and the water of the hydrates, and, in many cases, the sulphuric acid of sulphates. Such roasting is termed "Evaporating Roasting." As, frequently, in the Oxidising, Reducing, and Chloridising roasting, it is at the same time the object to volatilize certain compounds of the substance roasted, so in the Evaporating Roasting, a distinction is made between (A) oxidising Evaporating Roasting, (B) reducing Evaporating Roasting, (C) chloridising Evaporating Roasting, and (D) the simple Evaporating Roasting.

Finally—

V. By roasting, many ores are rendered more friable, the heat destroying the cohesion of the particles among themselves, as many iron ores found in large masses, and tin ore. As this object can be attained by the simple application of heat alone, without the aid of atmospheric air, when the operation is not connected with any chemical decomposition of the accompanying sulphur and metals; such an operation is to be considered more in the light of a simple calcination than of a roasting process.

If the object of roasting is to be fully accomplished, this can only be done by the fulfilment of those conditions under which it is in general possible, and to these conditions belong especially properly constructed furnaces and other arrangements.

Is it desired to fully oxidise the metals and to remove at the same time the sulphur and arsenic which may be in combination with them, the pulverized ores and mill products must be roasted in a reverbaratory furnace, having a horizontal hearth and a flat arch; the construction of the furnace may differ, but must always correspond with the end in view. The same applies to Reducing and Chloridising Roasting

If, however, it be desired merely to reduce such ores or mill products as are chiefly composed of sulphur metals, and not too rich in silver or lead, to a certain grade in their chemical composition, by roasting, this may be effected better, and with more economy in fuel, by roasting them in lumps of proper size. In this case, the roasting is carried on either in heaps, pits or kilns, (rooms partly enclosed on the sides by walls,) depending upon the character of the ore to be roasted, whether it oxidies easily or with difficulty.

—The violence of the expansion of water when freezing is sufficient to cleave a globe of copper, of such thickness as to require a force of 28,000 lbs. to produce a like effect.

Correspondence.

Utilization of Gas House Lime.

No. 8 Pine Street, New York,
August 27th, 1866.

Hon Horace Greeley,
President of the American Institute:

Sir—The editors of the Mining & Petroleum Standard and American Gas-Light Journal have called to my notice a report of proceedings of the Farmers' Club of the Institute wherein some information was asked relative to the treatment of gas house lime. As the question implies a wider scope than expressed in the report, and having bestowed some attention to this specialty, and with, I consider, satisfactory results, I respectfully submit what follows for whom it may concern.

As lime is known to be the cheapest and most convenient substance yet discovered for purifying commercial gas, it follows that the purer the limestone from which it is made, the better will be the result. It is used in a wet or liquid state, as milk of lime, in many cases, but in this country is usually employed as hydrated or water slacked, in nearly a dry condition; shell lime is also used to a great extent in New York.

The lime is laid about three inches deep upon wooden seives or trays, of convenient size for handling, which are placed in iron purifying chests in layers or stages, with intermediate spaces, until the chest is filled, and which is finally shut by a closely fitting water sealed cover. The gas, admitted at the bottom of the chest, is made to permeate and pass through the lime, which, in the transit, absorbs sulphuretted hydrogen, carbonic acid, and other impurities from the gas which passes out at the top of the chest.

After the lime has done its work, or become surcharged with impurities—as is generally the case—the gas is shut off from that and turned on to a chest having a fresh supply of lime. The contents of the first chest have now to be removed, which, until recently, was accomplished in the following manner by all the gas-works in this city:

The cover of the chest being removed, the seives are one by one taken out and emptied either into a barrow by which the lime is trundled off to a waste heap, or is thrown in a pile and afterwards removed to the deposit heap, usually upon or adjacent to a wharf. Now, as this surcharged lime has a great affinity for air, it absorbs it rapidly as soon as exposed, and hence becomes quite hot. The heat disengages the gases, which are thereby evolved into the air, greatly to the inconvenience—if with no other ill effect—of all persons in the neighborhood, and often those a long distance away. The lime thus treated becomes inodorous after a few hours, and is used, in some cases to fill in waste ground, in others is sold at trifling rates for use upon land or mixed with fertilizers, with, I consider, very questionable utility.

The noxious odors from gas works, of which there has been so long and such frequent complaint in this city, arise almost exclusively from the causes here given; all other offensive smells are either insignificant, or controllable with proper care by the means long used by the companies.

The recent action of the Board of Health upon the "gas house nuisance" has induced an improvement by the very distinguished engineer of the Manhattan Gas Co., who deserves the gratitude of the complainants for a clever practical device, to at least mitigate the evil under peculiar emergencies. The action of the Board (so properly potent) was almost mandatory; its imperative commands were slightly modified upon a promise to experimentalize. Chemistry, after various trials, failed to meet the issue with present arrangements; it was impractical to undertake extensive changes in the works, or to remove them. There seemed but one alternative if the Board insisted, and that was—stop the works, shut down the gate, and of course stop the supply (of gas). But that would be a greater evil than the odors. The Health Officers were getting firm and impatient, when Mr. Sabatton circumvented the whole procedure by a little practical strategy.

Instead of opening the chest and exposing its contents to the air, to set free a stench which some one might say could be cut with a dull knife, he forces through the chest a powerful current of air, its exit being carried some distance away from, and to a higher level than the works. The result is to so dilute the offensive gases with air that the objectionable effects are scarcely noticed by former complainants; but it is questionable if the real evil, if one of a sanitary type exists, is more than mitigated. An advantage realized to the gas companies by this plan is, that the lime may be used over and over, it is said several times, before removal, and at last when taken out, is not offensive.

I have no doubt that if differently treated than it has hitherto been, the waste lime from gas works may be vastly economized and converted into a valuable fertilizer, particularly for certain soils, and by the same means attain a quite as satisfactory sanitary result as that I have described.

I propose to pulverize or granulate dry peaty matter—which, in that state, rapidly absorbs and fastens sulphuretted hydrogen, and other feted gases in great volume. Provide upon wheels boxes of about one cubic yard content, and arranged to be easily emptied; one of which boxes fill with the prepared peaty matter, and place one or more of each along side of the purifying chest. The chest being opened, empty the contents seive by seive into the empty box, an attendant standing by the peat and throwing over the lime from each seive about an equal quantity of the peat, until the box is full, when it is removed to the place of deposit, and another substituted in its stead.

The work of opening the chest and removing its contents should be as expeditious as possible, for which reason it will be well if the chest be so placed that it can be worked on each of its four sides.

To render this process complete and most efficient, a grinding mill should be used convenient to the works, and to which mill the mixture should be conveyed in the boxes and dumped over the hopper. The mill is for the purpose of thoroughly and quickly incorporating the lime in uniform fineness by breaking up all lumps. From the mill the mixture should be placed in barrels and headed up for sale.

By this operation there will be a very slight escape of gas, and then for only a brief interval, and a valuable mixture is obtained, which will not only serve in a great degree to meet the expense of the lime to the gas companies, but will preserve for agricultural use a valuable commodity now absolutely wasted.

Very respectfully your obedient serv't,

J. Burrows Hyde.

Artificial Gas Coal.—Under this head the *Mining Journal* affords us information of experiments made by Mr. G. Mackenzie, of Glasgow. The novelty consists in mixing small coals, which is but of nominal value at the pits, with the heavy oil obtained as a bi-product in the manufacture of mineral oils, and which is comparatively not marketable. Thus both elements range on the side of economy, and their gaseous products must be freer from those deleterious gases, which sorely puzzle our engineers and chemists to retain in the purifyers. Mr. Mackenzie maintains that on the one hand we have a material deficient, and on the other, one that is rich in carbon. The results are likely to prove of incalculable importance to the gas companies, and the crude oil manufacturers, and we may add, to coal owners and gas consumers in general. He estimates the cost of his mixture at 20s. per ton, and that one ton will give 16,000 cubic feet of gas, equal, in illuminating power to 32 sperm candles. The cost of Lesmahago gas coal, is at present about 30s. per ton, and yields about 9,000 cubic feet of gas. Its coke is sold at 5s. per ton, whilst the coke from the above "mixture" is worth 20s. per ton for foundry purposes.

An Immense Cheese.—A cheese has been made in Canada recently, measuring six feet eight inches in breadth and three feet in thickness. Eight hundred cows furnished the milk used in its manufacture, and the latter weighed thirty-five tons. This cheese will be exhibited at an agricultural fair to be held at Toronto in September.

Important Discovery.

We learn by the arrival of the brig Thomas Walter, from St. Barts's and Saba, that sulphur in inexhaustible quantities has been found at the latter island. Tangible evidences are furnished in the form of a large consignment of it, accompanied with specimens of other minerals, to Col. Peter F. Stout. Sicily has long enjoyed the credit and monoply of furnishing this precious article to the art, science, military and commercial worlds, but by recent explorations made under the guidance of Col. Peter F. Stout, to the West India island, under instructions of a company to make a mineralogical and geological examination, discovered this great and invaluable prize to the United States—perhaps to the world.

A New York company entertained for a long time an idea of an exqloration of this nature, but to Col. Stout is due the honor of the discovery. Upon his personal account, he secured by purchase a large tract of this valuable mineral land, and subsequently secured a lifetime lease of an immense tract proving more valuable than his individual purchase—thus renderiug the sulphur product a monoply to himself. A company was proposed and formed, under the title of the "Saba Sulphur Company," to develop his purchased estate, to which he most generously acceded; and we now have the positive evidence of its productiveness, as we have—by letters—the promise of a full cargo in a few days.

Award of Contract for Constructing a Dam.—At eleven oclock on Monday morning proposals were opened by the Croton Aqueduct Department, and the contract awarded for the construction of a dam and its appurtenances for a large reservoir, near Boyd's Corners, in the township of Kent, Putnam County, New York. Eight bids in all were recived for the work, and the lowest bidders were Edward Roach, Joshua B. and Simon S. Jenkins, who recieved the contract for the sum of $201,002,80, upon their filing security for the faithful performance of the contract in the sum of $50,000.

Gas Explosion in Water Street.—On the morning of August 21st, while the workmen were repairing the gas pipes opposite No. 135 Water street, two men were found in the hole almost dead from inhaling the gas, which had escaped in large quantities. They were immediately removed, and on regaining the fresh air were soon better. They were but just saved from a dreadful death, however. No sooner had they been removed, than the gas took fire from a red hot smelting iron, which was being carried along the street by one of the men, and a body of flame rose up out of the earth to a great height. The heat from the flames was intense, and for some time created great anxiety for the safety of the adjoining houses, the men however quickly shovelled earth and stones in the hole and so prevented the fire from extending any further.

The Smithsonian Institution.—The work of rebuilding the structure of the Smithsonian Institution at Washington, which was destroyed by fire, is slowly progressing. The large towers on the north have been re-built with fire-proof floors to assure the safty of all the documents in future beyond all contingency. The large tower to the southward, which was very badly damaged, will soon be re-built. The roofing of the main building, two hundred feet long and fifty-five wide, will be of wrought iron covered in with slating, with rolled iron parlines, on a novel plan. It is expected that this roof will be up and covered in the month of October. Before the close of the season all parts of the extensive compile of buildings will be perfected by fire-proof roofs, and the interior finish will remain to be disposed of next season. The Building Committee of the Board of regents, Chief Justice Chase, General A. Delafield, Mayor Wallack and Professor James Henry, have entrusted the architects, Messrs. Kluss and Kammerbuer, of Washington, with the planning and superintendence of the work.

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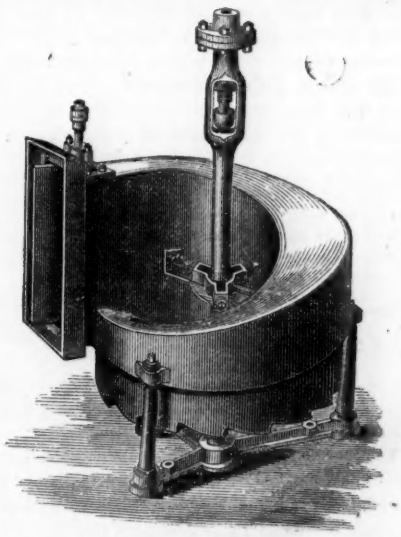

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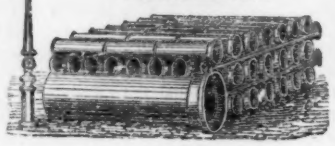

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We warrant our Glycerine free from acid and not to corrode the Meter metal, or to congeal or freeze at a stated temperature—also, not to evaporate to any extent The advantages and savings derived from the use of our fluid can be testified by many Gas Light Companies which we have supplied. We only refer to the certificates of H. J. Miller, Esq., President of Cincinnati G. L. and Coke Co., and Dr. J. Lawrence Smith, Professor of Chemistry in the Louisville College, and President of the Louisville Gas Co.

HARTMAN & LAIST,

Office No. 71 Main street, Cincinnati —Chemical Works on Providence st, and Miami Canal, near Findlay st.

CERTIFICATE.

Office Louisville Gas Co., Louisville, June 28, 1865.

This is to certify, that the Louisville Gas Co have used for about two years, the Glycerine prepared by Messrs. Hartman & Laist of Cincinnati, in their Wet Meters, and have in all instances found it to give most perfect satisfaction. Prior to the use of the above Glycerin, we had employed that manufactured by other parties, and we consider H. & L.'s superior to any we used.

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Our stoves give no smoke or odor, and are not liable to get out of order, being as simple in every respect as a kerosene lamp. The Baker, Boiler, and Flat-Iron Heater are the only special articles of furniture required. For all other purposes, ordinary stove furniture may be used.

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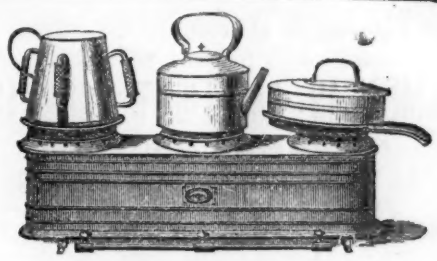

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STOVES,

Positively guaranteed free from Smoke or Smell.

Will Heat Offices, Parlors, Dining, Sleeping, and Bat Rooms. Also,

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STOVES & RANGES,

Will Boil, Broil, Roast, Bake, Toast, Stew, and Heat Irons.

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☞The Company have descriptive Catalogues, which will be sent or delivered, upon application for them.

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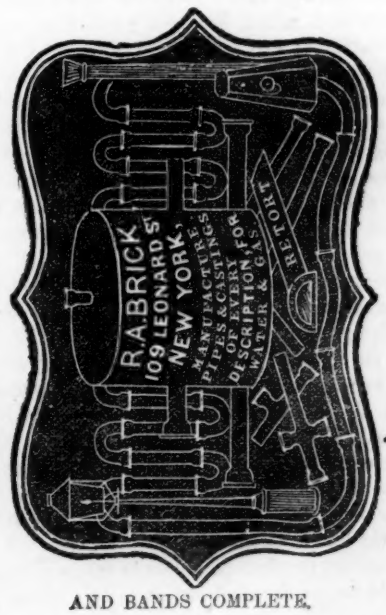

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Mining & Petroleum Standard
AND
AMERICAN GAS-LIGHT JOURNAL.
Published on the 2d and 15th of Each Month
At No. 22 Pine Street, New York.
BRYANT, CALLENDER & CO.,
EDITORS AND PROPRIETORS.
Profs. PARTZ & BUCK, Consulting Chemists.
MONDAY, SEPTEMBER 3, 1866.

WISHING TO MAKE this Journal an organ of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its colums aad devoted, the publishers solicit letters from all among them who make the study of those subjects a pleasure, or a profession.

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Gwinne's Process of Manufacturing Gas, at Elizabeth, N. J.

We have lately made a visit to the Gas Works at Elizabeth, N. J., under the superintendence of Mr. Geo. W. Harris, for the purpose of critically examining the process of practically manufacturing illuminating gas in the manner patented by the late W. H. Gwinne. We confess that we entertained a prejudice against the plan to some extent, because we thought the principal, if a sound one, would have been heretofore adopted by many gas companies; but having now actually seen the working of the apparatus, so simple and effectual, together with explanations why the plan has not been more generally adopted, we confess a change of opinion in regard to it. A yield of six feet of 14 candle gas to a pound of coal, is far beyond the usual yield from good bituminous coal, like the Pennsylvania coal, while with attentive manipulation, a Prince Albert or Cannel will do much more, but a full average in gas works is about 4 to the pouud.

The most striking feature in the operation is the facility with which hydrogen gas is generated to any extent, at a trifling cost. The average quantity of gas to the pound of coal at the Elizabeth works, is over six cubic feet. We were much pleased with the appearance of these works. "A place for everything and everything in its place," must be the motto of the Superintendent, and although it is not a difficult matter in small gas works to keep things in order, yet it is seldom that such method and regularity is observed as here.

The proposition of combining hydrogen gas with hydrocarbons is not new but the combinations and appliances which Mr. Gwinne obtained his patent for indicate advantages above any heretofore experienced. Our interview and conversation with Mr. Harris, was highly agreeable, and interesting. We found him intelligent upon the manufacture of gas in all its details, and possessing mechanical genius, and invention. The original plan by him of Gas Governor works admirably, and is worthy letters patent

To adopt the Gwinne process in ordinary benches would not require much alteration or expense, and we do not hesitate now to recommend that one or more benches should be arranged in established gas works, to experience the profitable results which ensue. Clay retorts should be used, especially for the hydrogen gas, and fire clay for every part of the works where it can be, in the place of iron.

An excellent feature of the Gwinne process is that there is no deposit of carbon, and another is desulphurizing the coal used, by the superheated steam.

Quality of Gas Supplied by Gas Companies.

It is an acknowledged fact, that manufacturers supply an article in accordance with the price paid for it, and the rule applies to every branch of manufacture—to gas compauies as well as to boot makers. No one expects French calf-skin boots at the same price as split leather! Now, if a gas company is obliged to furnish gas at a price which is only sufficient to pay for the manutacture of good gas, the natural consequence is that an inferior quality of the article will be given to the public. The public want light and are willing to pay for it, and any legislation or law which prevents that consummation, is wrong. It is also impolitic, because the poorer or thinner the gas the more rapid is its flow through the burner, and the meter measures the vapor, thick or thin, by its bulk, not quality. Gas possesses power of illumination according to its ingredients. The common standard of illuminating gas as supplied by gas works is about 14 to 15 candle power, but may be reduced or increased at pleasure. Five feet of rich gas will give as much light as ten feet of poor gas, or comparative with its power, and the poor gas will pass the burner more rapidly than the rich, on the principle that water passess more rapidly than molasses through the same orifice. So larger bills for less light is the inevitable result.

The Mining Region of Ulster.

It has long been known that the Shawangunk mountain range through Ulster County, N. Y. was rich in minerals, and that experiments of greater or less magnitude in pursuit of lead ore have been made. We think, however, it has not been so gengenerally understood that gold and silver exist there in such quantities as to attract the attention of capitalists, but such is the fact, and we understand extensive mining operations are about to be commenced by a company of Philadelphians, into whose hands a lieu of the "Schoonmaker tract," in the town of Gardiner has passed.

There have been seven different assays of the ore taken from the mine opened on the above named tract, including one made at the United States Mint, in Philadelphia, and the average result of the assays for gold and silver per ton of 2000 lbs, is $216. The Mint assay is $198 per ton of silver.—The best mines in Nevada average only $30 per ton—the Gould & Curry mine, which has been worked with greater profit than any other in the world, reaching $35.

DANGER FROM PETROLEUM IN LARGE QUANTITIES.—The late destructive fires in the Oil Regions, followed up by the disastrous conflagration in Jersey City, and the explosion, and burning of houses consequent in Norway, N. J., give fearful warnings of the danger from the concentration of crude petroleum, or any volatile oils, in large quantities. It also puts to rest, if it was not already so, the proposition of using petroleum instead of coal to make gas, in our large gas works. Where petroleum is necessarily stored in large quantity, the best plan of warehouse would be cellars or docks where the casks could be submerged in water.

A Remarkable Chinese Bell.

The following is a translation of an inscription upon a bell taken from an ancient temple, in Soochow, China, now in the possession of Mr. JOHN J. WESTRAY, in this city:

"In this great Temple a sacred Bell is now placed. Let it be known to this present and to all future ages that a good man from among the people has given this clear-sounding Bell to this most ancient Temple.

Custom forbids the mention of his name, but he is known as the "Sz Tsiok," (the scholar honored by the king.) He counseled with others and spared neither time nor money in making a large and clear-sounding Bell. This Bell when struck gives forth sounds that may be heard 15 li, (5 miles.)

Generation after generation shall be gladdened by the sound of this clear-toned Bell, and pray for ten myriads of blessings upon the Kingly Father (another name for the giver of the Bell.) The living and the dead shall rejoice to hear this clear-sounding Bell,—the living, that they are still upon the earth; the dead, in Hades, as they hear its silvery tones, may pass from thence to Paradise. The family of the "Kingly Father," "the scholar honored by the king," shall be blessed for ever. His five sons shall be blessed, their wives shall be joyful mothers of sons, that shall also be blessed for ever.

Signed by "Sung Sz," Abbott of the Monastery of the great Temple, in the 10th year of the Emperor "Kang Hee" (1662.) The Great Kingdom (*i.e.*, China.) being at peace, the five grains (the productions of the earth,) being abundant, the people enjoying unbounded prosperity, the winds being harmonious, the eight parts of the world (China,) being watered by timely rains and gentle showers, and all under heaven (the Chinese Empire,) being in a state of quiet and blissful repose."

Translated at Shanghae, Dec. 31, 1865.

We have seen the bell referred to above, and it is a beautiful specimen of casting. The characters (hieroglyphs) are very distinct and regular. The form of the bell is conical—not having a spreading flange upon it like our bells; its weight is 276 pounds. The composition is a fine bell metal of a yellow color. It was probably struck by hand. The sound is sonorous yet clear. Much danger, even life, must have been risked in getting possession of this great curiosity, as it was taken and brought from China clandestinely.

STANLEY'S DESULPHURIZER.—Among the numerous iventions lately presented to the public we observe one lately patented by I. N. Stanley, Esq., of Brooklyn, N. Y., a diagram and description of which we shall publish in a future number. The principal and most important improvements over its pre precedents consist in using fire clay entirely for the furnace and conveyors, and condensing the entire metaliferous elements of the ore so that none escape during the process of combustion or desulphurization. A full description will accompany the diagram, which we think will attract much attention from parties engaged in mining.

New Books.

HISTORY OF THE ATLANTIC TELEGRAPH. Hon. Henry M. Field, D. D. Charles Scribner & Co., 654 Broadway, New York:

It is seldom that we have had the pleasure of perusing a story of such really absorbing interest which has nothing of fiction or romance to give it *eclat* except the actual incidents and events attendant upon the inception, prosecution, completion and success of a scientific project which had to overcome the actual physical obstacles of nature of a magnitude probably never equaled in modern times, if ever since the history of man began. As we follow the author in his simple and graphic narrative, we are so absorbed and interested that we almost identify ourself with the actual operators, and become imbued with a sympathetic feeling which keeps pace with the varying fortunes of the enterprise, until they arrive at the climax of success and exultation.

"Nicholson Pavement."

We observe from our office window the interesting operation of placing the Nicholson pavement on Nassau Street, between Pine and Wall. It consists in first placing a bed of plank well covered with bitumen or pitch, for a foundation. Upon this is placed vertically, or endwise, sawed sections of plank about 4 inches wide and 8 inches in length, set transversly or across the street, with intermediate strips of board 1 inch thick, and 4 inches wide, which serve to seperate the blocks, leaving spaces or grooves about four inches deep and one inch wide, which is filled with coarse gravel, and the whole thoroughly saturated and covered with the bituminious preparation. The gravel is then beaten in compactly and re-saturated, and the whole covered with a finer gravel or sand, which completes the process, forming a smooth and arched roadway raised at the margins so as to form a shallow water way or gutter. It costs $4 00 per square yard, being one-third less than Russ, and about the same as Belgian, pavement, and far superior, for it is easy for animals and almost noiseless, and obtains a great economy in the wear and tear of all that travels or rolls over it. It is estimated that it would save its cost on Broadway in horse flesh alone, in one year.

It is much liked in Chicago and St. Louis, and elswhere west, where it is known and has been used for eight or ten years. Johnathan Taylor is the assignee of the patent, and is introducing this pavement, we understand, with much success.

Female Inventors.

The sterner sex do not seem to monopolize the entire inventive field, but occasionally have to share the honors with their fair competitors, if we may judge by the records of the Patent Office.

We have now before us models of what appears to be a very useful improvement in culinary vessels, designed to convey the odors arising from any culinary operation directly into the fire, where the vapor is consumed and carried off with the products of combustion into the chimney—the invention of a lady. It consists of a hinged cover, and a tube extending from the top of the vessel to the bottom, opening into the fire space, where any vapors are, of course, drawn into the fire and consumed. Frying pans and griddles are also made with elevated or deep covers which have an opening in the side to examine and turn the steak, etc., and simple orifices are provided at the top of the side of the utensil itself communicating with the fire space through which pass all odors and vapors. It is asserted that steak and onions can be cooked thus without any odor escaping into the room to be detected by the most refined olefactories.

Mrs. Sarah E. Sand is the inventor and patentee, and is desirous to find a party to manufacture and introduce the apparatus for all culinary operations.

☞ It affords us much pleasure to refer our readers to the interesting translation from the German of Plattner's Roasting Process of ores, etc., by Prof. J. H. Tiemann, who has passed considerable time in Germany and the old world investigating the process of mining, metallurgy, and kindred sciences, as there practiced and exhibited. These articles will be continued, and Miners and scientific readers will find an amount of information in these translations which will well repay for their perusal.

We desire to direct attention of those interested to the valuable correspondence of J. Burrows Hyde, relating to the utilization of gas-house lime for fertilizing purposes.

—The diminution of the magnetic dip has been going on in London for the last half century, with great regularity, at the rate of about three minutes annually.

The Coal Trade.—The shipments of coal from the anthracite region continues heavy, and large quantities accumulatihg on the wharves at Port Richmond. We notice no change in the demand this week, and the trade remains dull. The quantity of anthracite coal sent by the Philadelphia and Reading Railroad this week is 88,489 tons, and by Schuykill Canal 34,374 tons: total, 122,863 tons, an increase over the corresponding week of last year of 29,341 tons. Some of the operatives in the Schuykill region finding the markets were flooded with coal, a great portion of which, unsold and afloat at New York, and which is daily sold below cost have, we understand, wisely concluded to suspend operations until this surplus coal is worked off and a more favorable change in the trade should take place. It is generally believed by the miners that if a total stoppage could be effected for about two weeks, the result would prove of the greatest advantage to the fall trade. The miners in the Broad Top region are about to resume operations, after a suspension of nearly two months. About half the men have already gone to work, and it is supposed the rest will follow, probably on Monday.—*Philadelphia American.*

—Earth as a deodorizer, is very useful. In Washington, D. C. they have a car of earth placed under the vaults to absorb and deodorize the night soil and to facilitate removal a little more earth is thrown over the night soil, and all odor is destroyed, and a valuable manure obtained.

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Pulverized Slate & Viscous Matter,
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As a Roofing Material it Stands Unrivalled.

A mastic—it adapts itself to every shape and slope. Non-combustible, impervious, non-expansive, and undecaying.

Frost does not Crack nor Heat Dissolve it.

The only roofing material ever discovered that will resist the action of the elements as long as the structure it protects. Being susceptible of little, if any wear, from exposure, and

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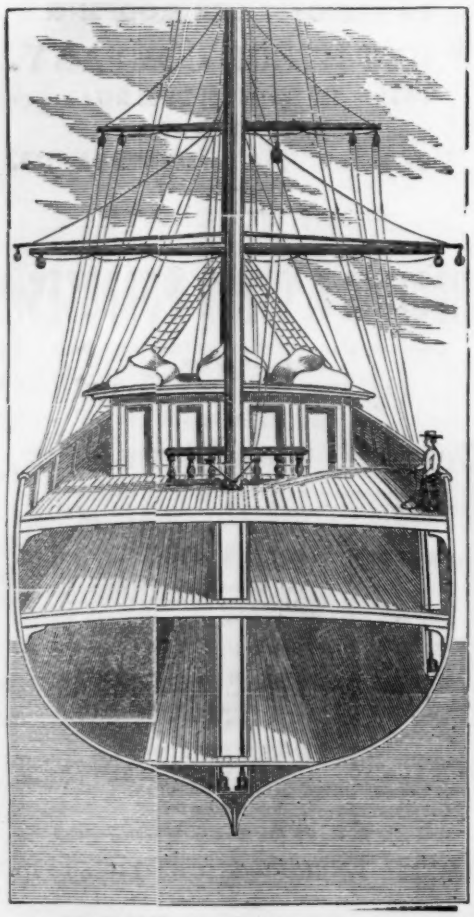

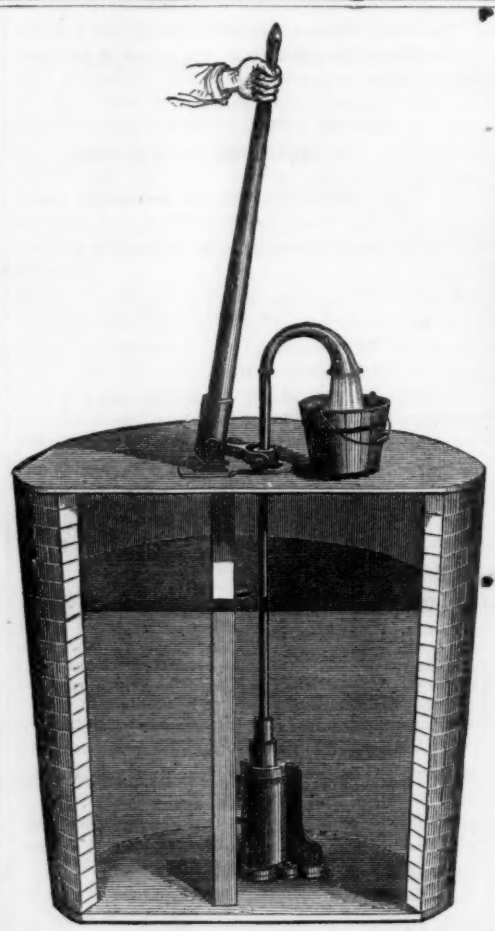

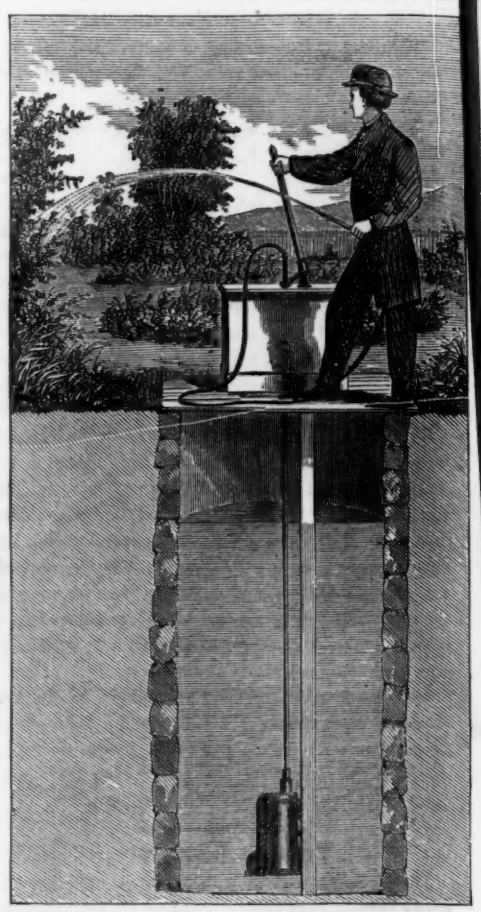

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Pumps, completed, will be delivered from the manufactory of the Company, to parties purchasing rights at a royalty of One Dollar each.

THE PATENT SUBMERGED PUMP.

This valuable Invention, now first introduced, will, it is believed, supersede all classes for any purpose in use at the present time.

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FIRST.—SIMPLICITY. The entire pump is composed of but six parts, all of cast-iron, which can be put together by any mechanic.

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THIRD.—CAPACITY. It is contended that, for the power applied, this Pump excels all others. The No. 1 (the smallest size,) of this Pump, with the power of one hand, has a capacity of thirty gallons per minute, and will throw a stream seventy feet in the air.

FOURTH.—CHEAPNESS. For economy, this Pump surpasses all others, its first cost being about one-third less than that of other Pumps of the same capacity, and being much less both in size and weight, there is a great saving in transportation.

ITSU SES.

FIRST.—For a House Pump; the smallest size of the patent Submerged Pump is sufficient for all family purposes. Placed in a well or cistern, water may be conveyed to every room in a common sized house.

SECOND.—For a Farm Pump; for all purposes connected with irrigating, watering stock, etc., etc. This Pump can be placed in running streams, ponds, bayous, etc., and water conveyed to any required distance.

THIRD.—For a Ship Pump; Any ship owner or captain, with short experience in the use of this Pump, will give his unqualified approval for ship purposes, either to be used as a bilge pump simply, or for washing decks, etc. From its simplicity, as a bilge Pump it will be found entirely free from choking, and will clear grain, dirt, stones, etc., with ease.

FOURTH.—For a Factory Pump, or for air in Oil Wells, for Breweries, or for pumping acids, hot liquors, etc., it is invaluable. It cannot be affected by any liquid.

FIFTH.—To all Directors and Officers connected with mining interests, the PATENT SUBMERGED PUMP presents great advantages.

The experience of the last five years have clearly proved at what great expense, both in first cost and freight, it has been necessary to be at to secure the proper means of expelling water from the mines, quarries, etc. With this Pump an immense saving is effected in both instances, as in first cost it is much less than other Pumps of the same capacity and power.

Its principle is that of a Double-acting Force Pump, with a heavy double-acting piston cast in one piece, and a double-acting iron valve within the same, without the use of leather valves or any packing whatever.

DIRECTIONS FOR ADJUSTING PUMPS.

1st. Find the exact measurement of the well or cistern from the extreme bottom to the top or curb, after which make such an allowance as may be required, above the curb or top, as will accommodate the sized vessel required to be used, and in respect to the quantity of pipe required, always deducting for the length of the Pump and the space between the bottom and the Pump. 2d. Provide a plank, to which the Pump must be secured, not less than seven inches wide by two or two and a half inches thick, which should reach from the bottom to the top of the well or cistern, always placing the plank on the side of the well or cistern. 3d. Before putting the plank into a well or cistern, fit and bolt the Pump to the plank, and screw the pipe firmly in, taking care to have the Pump not less than one foot from the bottom of a well, nor less than six inches from the bottom of a cistern. Yet, if the water be six feet deep in a well, then adjust the Pump three feet from the bottom, and in like proportion as the case will permit, always being governed by the depth of water in the well, and always observing the necessity of securing the plank at the bottom of the curb, by braces across the well, and standing perfectly plumb and solid under the platform orcovering of the well, when the fulcrum can be fastened to the platform, taking care to give the pipe free action when in motion.

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375	36	94 00	22 00	116 00
450	84	112 00	25 00	137 00
600	02	150 00	30 00	180 00
750	89	188 00	35 00	225 00
1,000	64	250 00	42 00	292 00
1,200	48	300 00	45 00	345 00
1,400	50	350 00	50 00	400 00
1,600	52	400 00	54 00	454 00
1,800	55	450 00	60 00	510 00
2,000	58	500 00	62 00	562 00
2,500	60	625 00	72 00	697 00
3,000	63	750 00	85 00	835 00
3,500	66	875 00	87 00	962 00
4,000	69	1,000 00	100 00	1,100 00
4,500	72	1,125 00	113 00	1,238 00
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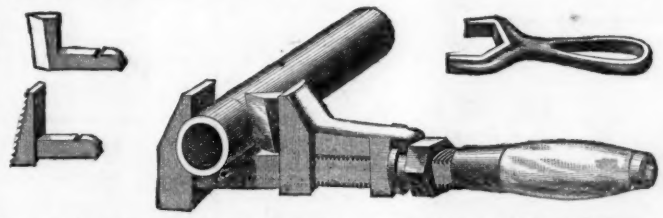

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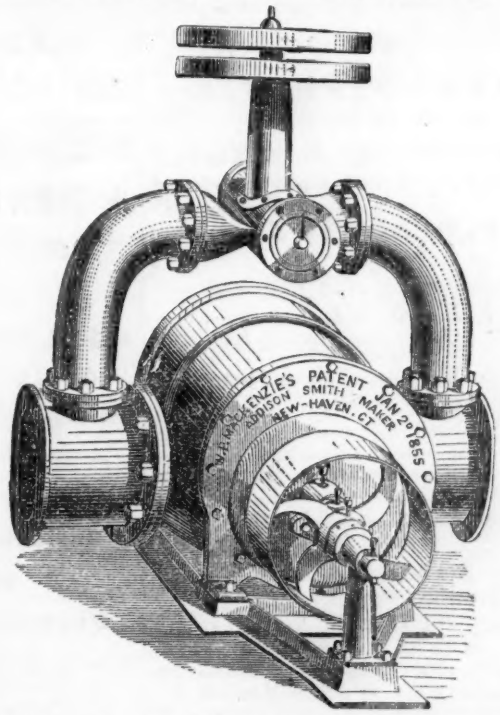

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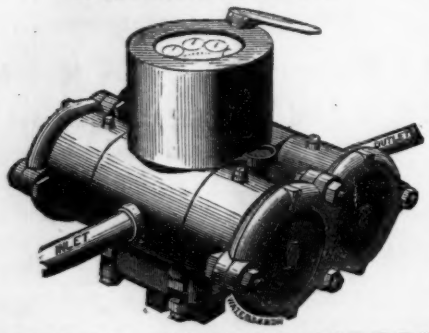

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For Rahway, *6 (stopping at Market Street only, Newark) 7, and 10 a. m. and 12, 2, 3.30, 4.10, 4.30, 5.10, 5.40, 6.20, 7.10, and 12 p. m.—Sunday, 6 p. m.

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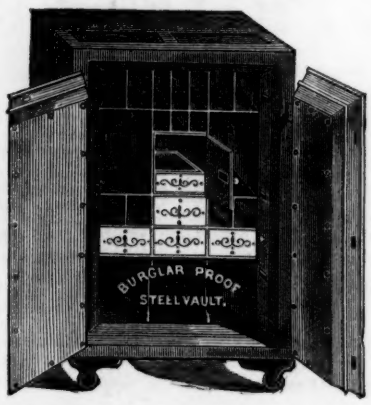

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5	26	18	13	220	4	44	24	16	400
6	22½	26	14	250	5	44	32	17	500
7	26	21	14	240	5½	40	38	17	525
8	29	24	14½	300	6	50	32	17	550
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6th. The variety of fancy work that can be done on the

WEED MACHINE,

with so little trouble, makes it equal, if not superior, to six machines combined; for instance, it Binds, Hems, Tucks and Sews on the band at the same time, and in face, the

WEED NO. 2 MACHINE,

as before stated, is equivalent to a combination of any six ordinary machines.

Orders for Machines may be sent through the American Advertising Agency, 389 Broadway, N. Y.

Below we give a few prices:

No. 2. Oil Black Walnut, Ornamented with Hemmer.	$60,00
No. 2. Oil Black Walnut, Hall Case, Ornamented, with Hemmer.	65,00
No. 3. Extra Oil Polished Black Walnut, Half Case, Large Table beautifully Ornamented.	75,00

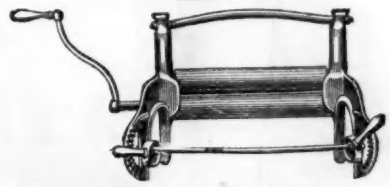
WEED SEWING MACAINE Co.,

136) 506 Broadway, New York

PUTNAM'S CLOTHES WRINGER.

IT IS THE ONLY RELIABLE

Self-Adjusting Wringer.



No Wood-work to Swell or Split. No Thumbscrews to get out of order. Warranted with or without Cog-wheels.

It took the First Premium at Fifty-seven State and County Fairs in 1863, and nearly double that number in 1864, and is, without an exception, the *best* Wringer ever made. Patented in the United States, England, Canada, and Australia. Agents wanted in every town, and in all parts of the world. Energetic agents can make from $3 to $10 per day.

WHAT EVERYBODY KNOWS, VIZ.:

That Iron well galvanized *will not rust.*

That a *simple* machine is better than a complicated one.

That a Wringer should be *self-adjusting, durable, and efficient.*

That thumb-screws and fastenings cause *delay* and *trouble* to regulate and keep in order.

That wood soaked in water will *swell, shrink,* and *split.*

That wood-bearings for the shaft to run in *will wear out.*

That the Putnam Wringer, with or without cog wheels, will *not tear the clothes.*

That cog-wheel regulators are not essential.

That the Putnam Wringer has *all* the advantages, and *not one* of the disadvantages above named.

That all who have tried it pronounce it the *best* Wringer ever made.

That it will wring a thread or a bed-quilt *without alteration.*

We might fill the paper with testimonials, but insert only a few to convince the skeptical, if such there be; and we say to all, *test* Putnam's Wringer. Test it *thoroughly* with *any* and any others, and if not entirely satisfactory, return it;

PUTNAM MANUFACTURING CO.—*Gentlemen:* I know from practical experience that iron well galvanized with zinc will not oxydize or rust one particle. The Putnam Wringer is as near perfect as possible, and I can cheerfully recommend it to be the best in use. Respectfully yours,

JOHN W. WHEELER, Cleveland, O.

Many years' experience in the galvanizing business enables me to indorse the above statement in *all particulars.*

JOHN C. LEFFERTS, No. 100 Beekman St.

NEW YORK, *January,* 1864.—We have tested Putnam's Clothes Wringer by practical working, and know that it will do. It is cheap; it is simple; it requires no room, whether at work or at rest; a child can operate it; it does its duty thoroughly; it saves time, and it saves wear and tear. We earnestly advise all who have *much* washing to do, with all intelligent persons who have *any,* to buy this Wringer. It will pay for itself in a year at most. HORACE GREELEY.

PRICES—$8, $9, and $10.

Sample Wringers sent, express paid, on receipt of price. Manufactured and sold, wholesale and retail, by

PUTNAM MANUF'G CO.,

13 PLATT STREET, New York,
BENNINGTON, Vt.,
CLEVELAND O.

WATER AND GAS PIPE.

The Boston Bituminized Pipe Company,

Are now manufacturing and prepared to take orders, for their PATENT PIPE, (from 2 to 12 inches in diamter,) as a substitute for Iron, Copper, Lead, &c., for the conveyance of WATER, GAS, SEWERAGE, &c. &c.

From the testimonials received, and the entire satisfaction it has given those having it in use, we feel warranted in claiming for this pipe over that of any other, the following advantages, viz:

It is much CHEAPER—has great strength (it having been tested to 500 lbs. to the square inch,) combined with LIGHTNESS, costing less for transportation; the joints are easily made and perfectly tight; it does not expand or contract from different degrees of tempera ture, and is free from *CORROSION* or *CONCRETIONS* forming; does not impart any taste or injurious properties to water, and as far as anything can be said to be indestructible, we deem this to be.

As a GAS PIPE, we say it has no superior. The Lowell Gas Light Co., purchased and laid some of this Pipe last year, and have likewise subjected samples to a test of four month's duration in their dry lime purifiers, with the most satisfactory results, in fact establishing beyond a doubt, its perfect adaptation to the wants and requirements of Gas Companies. specimens of which, together with the statement of S. Cushing, Esq., Agent Lowell Gas Light Co., who made these experiments. I shall be pleased to show, and give all other needed information, by applying in person, or by letter, to JOHN L. WEBSTER, Treas.,

Boston Bituminized Pipe Co.,

127] No. 2 Pearl st. House, Boston.

AMBROSE SPENCER GILCHRIST.

(LATE CAPT. U. S. V.,)

CIVIL, MINING

AND ARCHITECTURAL ENGINEER,

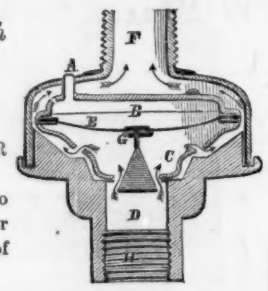
No. 200 BROADWAY, Office 12.

New York.

NOTICE TO GAS COMPANIES AND GAS CONSUMERS.

THOMPSON'S PATENT GAS CONTROLLER,

The only Self-Acting Gas Controller, Regulator, and Burner Combined which has ever been invented, or known to science.



THE PRINCIPLE UPON WHICH THE THOMPSON'S AUTOMATIC GAS CONTROLLER works is one well known to mechanics, and is simple in its operation.

Within the circumference of a small cylinder below the burner is placed a conical valve attached to a movable diaphragm. The diaphragm rises or falls as the pressure of gas from the pipe is lesser or greater, and the valve acts upon the valve-seat with such regularity of movement that in a difference of from five-tenths of an inch pressure to five inches the variation in flame is hardly perceptible.

The simplicity of its machinery and the nature of the material used in its construction insure its regular action and durability.

In consequence of the uniform quantity of gas which passes the Controller to the burner, there is no waste, and a steady, soft flame is produced, which is important to all who read, write, or work by gas-light. The unsteady flickering blaze which invariably exists when the pressure of gas is beyond the requisition for consumption, has injured the sight of thousands who have been subjected to it.

For street lamps these Controllers are especially valuable, because the pressure varies materially during the night, and in consequence there is a waste of gas, and the light variable.

Improvements have lately been made in the mechanism of the Controller which makes them almost a perfect meter to each ourner, and they are now offered to he public with more confidence than ever before.

Reference is permitted to the following named gentlemen—

Col. CHAS. ROOME, President Manhattan Gas Company, N. Y.
C. H. SAND , Esq., President Metropolitan Gas Company, "
J. H. ADAM, Esq., President New York Gas Company, "
PETER COOPER, Esq., Cooper Institute, "
JOHN A. DUFF, Esq., Olympic Theatre, "

GEO. H. KITCHEN, Inspector of Gas Meters, N. Y
A. L. BOGART, Esq., Gas Engineer.
Col. J. A. SABATTON, Engineer Manhattan Gas Company.
Col. A. J. WHITE, Engineer Metropolitan Gas Company.
J. K. SIMPSON, Esq., Engineer Cooper Institute.

Persons interested are invited to call at the Office, 28 Liberty street, where they can see the operation by pressure guage and test meters.

M. L GALLENDER, Agent
Office, 22 PINE STREET.

JOSEPH LEES, San Francisco, Agent for California and Oregon.

THE AMERICAN METER CO.

Organized under the General Manufacturing Laws of the State of New York

SAMUEL DOWN, President. HENRY CARTWRIGHT, Vice President. RICHARD MERRIFIELD, Secretary and Treasurer

Trustees.

SAMUEL DOWN, WILLIAM HOPPER, R. H. GRATZ. HENRY CARTWRIGHT, RICHARD MERRIFIELD.
THOMAS C. HOPPER, *Superintendent at Philadelphia.*

This Company is now prepared to furnish WET AND DRY GAS METERS, STATION METERS, GOVERNORS, PRESSURE INDICATORS & REGISTERS, SERVICE and METER COCKS, and all other articles in their line appertaining to the use of Gas-Works.

The combination of Mechanical and Scientific Skill, and the long experience of the several members of the Company, is a sure guarantee of durability, accuracy and excellence of workmanship. Orders addressed

AMERICAN METER COMPANY,

West Twenty Second Street, New York. Arch and Twenty-Second Streets, Philadelphia. No. 23 West Street, Boston will meet with prompt attention.

Harris & Brother, Practical Gas Meter Manufacturers,

Continue, as heretofore at their old Establishmen, No. 1117 CHERRY ST., PHILADELPHIA, to Manufacture

WET AND DRY GAS METERS, and all kinds of GAS APPARATUS, and furnish all articles appertaining to the use of Gas Works. ☞OUR WORK WARRANTED—Satisfaction Guaranteed. Orders respectfully solicted, and promptly attended to, by
HARRIS & BRO., No 1117 Cherry st., Philadelphia.

Messrs. Harris & Brother,

Philadelphia Gas Works, February 14, 1857.

Dear Sirs;—I take great pleasure in stating that we have found your meters to register with entire correctness, and to be generally of very good quality—the number furnished by you to these works is over 5,000.

JOHN C. CRESSON, Engineer;

Office of the Gas Light Company of Augusta, Ga., March 6th, 1858.

This is to certify that having used meters manufactured by Messrs. Harris & Bro., for the last nine years, we do not hesitate to state they have given entir8 satistaction in point of wokmanship and accuracy of registration; they are surpassed by none, and equaled by few manufactories in the Union; we have used meters made by other establishments but our preference is in favor of those made by Harris & Bro., of Philadelphia, Pa.

G. S. HOOKEY, Superintendent of the Gas Light Company of Augusta, Georgia.

Messrs. Harris & Brother, Philadelphia.

Philadelphia, March 4, 1858.

Gentlemen—We take great pleasure in bearing our testimony to the very superior character of the meters we have received from your establishment. We have always found the workmanshipall we could desire, while the accuracy and reliability of their measurement have always been satisfactory. - We have used meters made by other parties, and none have given as entire satisfaction as those received from you. We are, gentlemea, very truly, yours, BIRKINBINE & MEARS.

Messrs. Harris & Brother.

March 14, 1857.

Gentlemen—For the last ten years we have used in the Philadelphia Gas Works, meters made in your factory, and take pleasure in expressing my opinion to their correctness. On several occasions I have taken your meters apart, and found the material used in the manufacture of the same, to be as fine quality as is used in those m .. . from Europe, or made by any of the manufacturers in the United States. Respectfully Yours, GEORGE WIEGAND, Inspector of Gas Fittings, Philadelphia

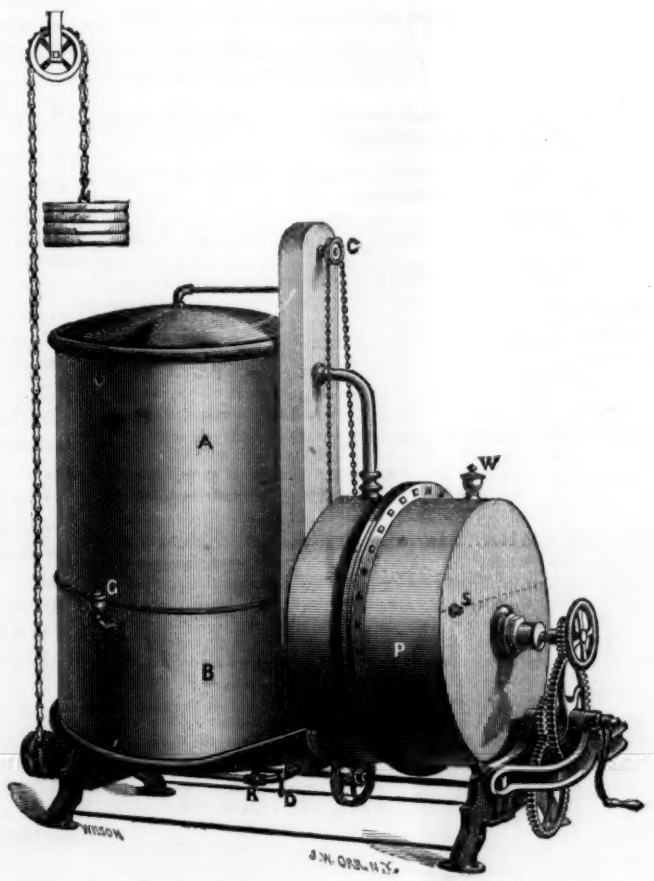
EMPIRE STATE GAS MACHINE,.

LEVI STEVENS' PATENT, FOR SUPPLYING,

Dwellings. Stores, Factories and Public Buildings.

THE GAS GENERATED BY THIS MACHINE

Is a mixture of the vapor of hydro-carbon with common air. The mechanical devices employed are such as, from a long experience and critical examination into the nature of the element brought into use, seem best adapted to secure a certain and satisfactory result. GASOLINE, the liquid employed, is the more volatile portions of Petroleum, of a specific gravity of 0.6587. This liquid exposed to the action of this machine is vaporized, and a close mechanical mixture of the vapor with common air is effected. The value of the gas produced, its permanency, its illuminating quality, and freedom from liability to condensation, depend almost entirely upon the perfect and uniform character of this mixture. Hence the great importance of mechanical means adapted to secure all the conditions requisite in a Portable Gas Machine.



CASH PRICE-LIST OF MACHINES COMPLETE;

(Boxed and delivered on the cars at the Manufactory.)

No. 1,	$150,	5	Argand Burners.
do. 2,	250,	10	do.
do. 3,	350,	20	do.
do. 4,	450,	35	do.
do. 5,	600,	60	do.
do. 6,	1,000,	125	do.
do. 7,	1,500,	250	do.

This machine will produce the most brilliant and steady light without Fire or Heat, and is warranted to operate in every respect as represented.

The EMPIRE STATE GAS MACHINE is the most SIMPLE and EFFECTIVE MEANS KNOWN FOR PRODUCING GAS WITHOUT HEAT.

Its action is automatic, feeding itself with constant supplies of Gasoline, thus securing steady and uniform supplies of Gas. The gas produced is equal to the best known Illuminating Gas. It is as economical as any other, and is adapted to a wider range of use for Lighting, Heatin and Mechanical purposes. It will maintain its illuminating power under as great a degree of cold as any other. It is free from danger with the ordi nary care in using gas. Its remarkably pure and steady light is pleasant for the eye. It renders it easy for persons living remote from street gas pipes to enjoy the luxury of a pure GAS-LIGHT, at a COMPARATIVELY SMALL COST, AND WITH LITTLE TROUBLE.

☞ The public are invited to witness its operations at our store. GASOLINE will be supplied by us, at market prices, or may be obtained from the various other sources of supply now going into operation.

MITCHELL, VANCE & Co., 620 Broadway, New York,

Manufacturers of Chandeliers and Gas Fixtures of every description. Also, Chandeliers, Brackets, Lamps, &c., for Coal Oil, adapted to Churches, Public Buildings, Dwellings, &c.

The American Association.

We take the following extracts from the report of the proceeding at the Buffalo meeting of the American Association for the Advancement of Science, published in the Buffalo *Express:*

EFFECT OF SUNSHINE ON FIRE.

Professor Horsford read a paper on the "Effect of Sunshine on Fire," giving the results of some practical experiments. He said that under certain described thermometrical and barometrical conditions, with the atmosphere at rest, he burned a portion of wax candle upon a disc of glass, surrounded by a wall of books, to screen it from currents of air, extinguishing the flame at intervals of thirty-three minutes, and weighing the disc and candle at the conclusion of each interval, to find the quantity consumed. With apparent conditions almost constant, the consumption varied from 61 to 89.5 grains. He then burned a candle similarly in an ice chamber of glass, to preserve constant the condition of aqueous vapor in the air, and with the same inequalities in result, though the candle burned slower in the ice chamber than without. It was obvious in his experiment, that the consumption of the candles, notwithstanding their protection, was affected by inevitable slight currents of air, sometimes hastening the combustion.

As regards the draft of chimneys, the speaker found during the late heated term, that neither meats nor bread could be baked in his kitchen range between the hours of 12 and 3. Investigating the causes, he concluded them to be due to the column of heated air rising from the slated roof of the house, which by friction drew out from windows and crevices the air in the interior, which would have otherwise supplied the draft of the chimney; and also produced a counter current of air flowing across the opening of the chimneys above, pressing upon the column of air rising through them. The Professor's conclusions, generally stated, were, that sunshine or light has no direct effect upon ombustion, and that the effects from which the notion arises are due to incidental causes, as partially indicated in this brief synopsis of his remarks.

PETROLEUM.

Dr. T. Sterry Hunt gave an account of his observations in petroleum. As to the origin of petroleum, Dr. Hunt supposes it is indigenous in two limestone formations, and that it may thence have risen and accumulated in overlying pervious strata, or in fissures capped or sealed by impervious beds, such as Pennsylvania sand rock or quartenary gravel beds. He was inclined to think, however, that petroleum may also be indigenous in certain sandstones of Devonian or carboniferous age, and referred to Lesley's observations to this effect, closely agreeing with those of Wall and Cruger in Trinidad, where fossil plants are sometimes found partly converted into petroleum and partly into lignite. Dr. Hunt regards the process by which animal and vegetable hydrocarbonaceous tissues have been converted into liquid or solid bitumen, as a decay or fermentation under conditions in which atmospheric oxygenation is excluded, so that the maximum amount of hydrogen is retained by the carbon; and as representing one extreme of a process, the other of which is found in anthracite and mineral coaroal, the two conditions being antagonistic and excluding each other, and the production of petroleum implying, when complete, the disappearance of the organic tissue. Hence pyroschists, the so-called bituminous shales, and coal are not found together with petroleum, but in separate formations, and it is to be borne in mind that the epithet bituminous applied to the former one is a mistaken one, since they seldom or never contain any bitumen, although like all fixed organic bodies, they yield hydrocarbons by destructive distillation. The fallacy of the notion which ascribes petroleum to the action of subterranean heat on strata holding coal and pyroschists was exposed, and remarked among other arguments founded upon the impermeability of many of the petroleum bearing strata, that the oil of the Trenton limestone occurs below the horizon of any hydrocarbonaceous rocks.

PATENT CLAIMS.

Pertaining to Gas, Mining, Petroleum, Water, etc.

For the two weeks ending August 21, 1866.

57,087—REGULATOR FOR GAS-BURNERS.—William Clark, Boston, Mass.

I claim, in combination with the tip of a gas burner, a regulating device, constructed of the frusto-conical valve and seat with the cross bar, c, and the screw spindle, d, operating together in the manner described.

57,123—MANUFACTURE OF ILLUMINATING GAS.—H. D. Green, Portland, Oregon.

I claim the manufacture of illuminating gas from coal and sawdust combined and subjected to destructive distillation, substantially in the manner and for the purpose set forth.

57,163—APPARATUS FOR CARBURETTING AIR.—Hugh L. McAvoy, Baltimore, Md.

I claim, First, the air- forcing chamber, C, revolving in the tank, B, which is surrounded by the reservoir, A, in which the carburetting cylinder or its equivalent revolves.

Second, the inverted chamber, F, vibrating upon the axis and actuated by the varying pressure of the gas contained therein, to operate as a regulator, substantially as described.

Third, the displacing chamber, c, in the chamber, C', operating as described.

Fourth, the carburetting cylinder, D. provided with cups or receptacle on its inner side, and with the reticulated permeable surface or its periphery.

Fifth, the chamber, B, containing the fluid in which the air-forcing cylinder revolves, and separating it from the fluid in the reservoir.

Sixth, the hanging strands or tapes, h', in the chamber, C, as and for the purpose described.

59,172—MODE OF PREVENTING THE FREEZING UP OF GAS PIPES.—James H. Mulhall, Albany, N. Y.

I claim the employment at the junction of the lamp post gas-pipe, and of the service-pipe at the bottom of the post, of a reservoir to hold alcohol or other fluid uncongealable at the lowest temperature of the climate, said reservoir to be formed, fitted and arranged, substantially as described.

57,194—DESULPHURIZING ORE.—Van Buren Ryerson, New York City.

I claim the process substantially as described of subjecting ores which have been desulphurized and their bare metals oxydized to the action of the gases evolved from the process of desulphurizing another charge of such ores in the presence of atmospheric air, and mingled with binoxide of nitrogen and jets of steam, for the purbose specified.

57,269—GAS METER.—Jean Theodore Schotte, Paris France.

I claim, First, The apparatus for measuring gas as herein shown and described, the same consisting of the following elements combined: first, a drum with interior spiral partitions actuated by the gas as herein shown and set forth; second, a valve, together with floats so arranged that it may open and close automatically; third, a regulating or discharge-pipe for carrying off all water in excess of the proper level.

Second, In apparatus for measuring gas or other fluids, as specified, I claim the drum with interior spiral partitions, and actuated as herein shown and set forth.

57,285—APPARATUS FOR TREATING PETROLEUM.—D. H. Burket, Halfmoon, Pa., and J. C. Gray, Putneyville, Pa.

We claim, First, Distributing pipes, N, N, and wings, W W, when constructed and operating with pipe, M, and tank, A, substantially in the manner and for the purposes set forth.

Second, The packing box, E, when constructed and operating with F, and connection-pipe, D, substantially in the manner and for the purposes set forth.

57,293—APPARATUS FOR DESULPHURIZING ORES.—Francis W. Crosby and Woodhull Helm, New York City.

We claim, First, The combination of a series of sliding tables or shelves with the interior of an inclined hot air or gas conducting flue, substantially in the manner and for the purpose herein set forth.

We also claim in our improved apparatus, so combining the lower extremity of the inclined flue with the eduction flue of the furnace as that the ore or other material falling into the inclined plane shall drop in a thin sheet over the mouth of the said eduction aperture, substantially in the manner and for the purpose herein set forth.

57,333—LINING FOR OIL BARRELS.—Robert V. Jones, Canton, Ohio.

I claim the within-mentioned ingredients when mixed together and used as and for the purpose herein specified.

57,337—TREATING METALLIFEROUS ORES.—William L. Raht, Baltimore, Md.

I claim the within described process of expelling from metalliferous ores sulphur, arsenic or antimony, by treating the matt or regulus run from such ores in the manner set forth.

57,425—GAS-REGULATOR.—Joseph S. Wood, Philadelphia, Pa.

I claim, First, Passing the gas into the floating receiver, C, by the b nt pipe, E, and valve, h n, and out by the bent pipe, E, arranged substantially as described.

Second, Using the pipes, E and F, as guides for the rising and falling of the receiver, C, substantially as described.

The combination of the vessel, A, pipes E and F, receiver, C, and valve, h, arranged and operating substantially as described.

57,427—PROCESS FOR EXTRACTING OIL FROM FISH.—Edward H. Woodward, New York City.

I claim submitting fish to the action of a digester, as herein set forth, and extracting the oil therefrom without pressure, substantially as herein described.

57,442—APPARATUS FOR CARBURETTING AIR.—Donald McDonald, assignor to himself and Noel E. Sisson, and Henry Q. Hawley, Albany, N. Y.

I claim the combination of a cylinder or drum constructed like the drum of a wet gas meter, with fine wire gauze, or its equivalent, attached to said drum and covering the outlet openings of its measuring chambers, substantially as above described and for the purpose set forth.

Brevities.

—The explosive force of close confined gunpowder, is six and a half tons to the square inch.

—The greatest artificial cold ever produced, is ninety-one degrees Fahrenheit.

—During the conversion of ice into water 140 degrees of heat are absorbed.

—The mean annual depth of rain that falls at the equator is 96 inches.

—The rag business in this city is said to amount to $30,000,000 per annum.

—Assuming the temperature of the interior of the earth to increase uniformly at the rate of one degree to every forty-five feet, at the depth of sixty miles the degree of heat would be sufficient to fuse all known substances.

—As much nitrate of soda as can be held between the fingers and thumb will preserve flowers for the space of a fortnight.

—It is stated that soap manufactured from coal oil will remove all kinds of stains and dirt,

—Heat rarifies air to such an extent that it can be made to occupy 5,550 times the space it did before.

—Oil borings have ceased in Iowa, since the publication of State Geologist White's opinion on the presence of oil in that State.

—The common phosphorous bears for twenty or thirty seconds without ignition the action of radiant heat at a focus where, in the fraction of second, platinized platinum is raised to a white heat.

—Over thirty million pounds of tea are annually consumed in the United States.

—A new test for acids and alkalies, called "cyanin," has been discovered by a German chemist. It is an artificial blue, obtained by acting on chinoline with iodide of amyle. Its delicacy as a test for acids and bases is quite marvelous, and far superior to litmus.

—The Yield of Petroleum in the United States during the last five years is as follows: 1861, 24,000,000 gallons; 1862, 40,000,000; 1863, 70,000,000; 1864, 87,000,000; 1865, 91,160 000.

THE MINING & PETROLEUM STANDARD AND AMERICAN GAS-LIGHT JOURNAL, is published at No. 22 Pine Street, opposite the Sub-Treasury Building on the 2d and 16th of every month, and is a recognized official organ of—

LIGHT, HEAT, MINING INTERESTS.

PETROLEUM, WATER-SUPPLY, AND

SCIENTIFIC SUBJECTS GENERALLY.

TERMS.

SUBSCRIPTION—Three dollars per annum in advance.

ADVERTISEMENTS.—One dollar per inch in column for each insertion. Large space or long time by special contract.—Payable in advance.

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PHILADELPHIA—JOY, COE & Co., No. 441 Chestnut st. cor. 5th.
Germany ... ...B. WESTERMAN & Co., of New York.
Great Britain....TRUBNER & Co., 60 Paternoster Row, London.
France. ..... LE JOURNAL DE L'ECLAIRAGE AU GAZ, 25 Boulevard Poissonnière.

☞All communications to be addressed to "The Editors," No. 22 Pine Street, New York.

JUNE 20. 1867.